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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ERIC LABARRIERE, ANGELO BEATI, and
MICHEL BONNAMOUR

Appeal 2010-001581
Application 10/584,165
Technology Center 3600

Before LINDA E. HORNER, JOHN C. KERINS, and
EDWARD A. BROWN, *Administrative Patent Judges*.

BROWN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Eric Labarriere et al. (Appellants) appeal under 35 U.S.C. § 134(a) from a rejection of claims 16-18, 22-25, and 28. (App. Br. 2). Claims 1-15 have been cancelled, and claims 19-21, 26, 27, and 30 withdrawn from consideration. (*Id.*). We have jurisdiction over this appeal under 35 U.S.C. § 6(b).

We AFFIRM.

THE INVENTION

Independent claim 16, reproduced below, is representative of the appealed claims:

> 16. A terminal end-piece for a fuel assembly of a nuclear reactor, the assembly comprising fuel rods and a skeleton for supporting the fuel rods, the fuel rods extending in a longitudinal direction and being arranged at nodes of a substantially regular network, the support skeleton comprising two terminal end-pieces and elements for connecting the terminal end-pieces, the fuel rods being arranged longitudinally between the terminal end-pieces, comprising:
>
> an arrangement for laterally maintaining adjacent longitudinal ends of substantially all the fuel rods, the arrangement configured at nodes of the substantially regular network, wherein the maintenance arrangement constitutes an arrangement for longitudinally securing the adjacent longitudinal ends of the fuel rods relative to the terminal end-piece, and wherein the end-piece comprises two components for longitudinally clamping the adjacent longitudinal ends of the fuel rods between the two components.

THE REJECTIONS

1. Claims 16, 17, 22-25, and 28 are rejected under 35 U.S.C. § 102(b) as anticipated by Christiansen (US 5,490,191, issued Feb. 6, 1996).

2. Claim 18 is rejected under 35 U.S.C. § 103(a) as unpatentable over Christiansen and Matzner (US 5,384,814, issued Jan. 24, 1995).

ISSUE

Did the Examiner err in finding that Christiansen discloses "an arrangement for longitudinally securing the adjacent longitudinal ends of the fuel rods relative to the terminal end-piece, and wherein the end-piece comprises two components for longitudinally clamping the adjacent longitudinal ends of the fuel rods between the two components," as recited in claim 16?

ANALYSIS

Rejection of claims 16, 17, 22-25, and 28 as anticipated by Christiansen

Independent claim 16 is directed to a terminal end-piece for a fuel assembly of a nuclear reactor, and recites "an arrangement for *longitudinally securing* the adjacent longitudinal ends of the fuel rods relative to the terminal end-piece, and wherein the end-piece comprises two components for *longitudinally clamping* the adjacent longitudinal ends of the fuel rods between the two components." (Emphasis added). The Examiner determined that Christiansen's lower tie plate 54 and spring elements 55 correspond to the recited "two components" (Ans. 5), and that Christiansen's spring 55 and bore 54h in the lower tie plate 54 correspond to the claimed "arrangement" (*Id.* at 6, citing Fig. 5) (*see also* Christiansen, col. 4, ll. 45-53.) The Examiner determined that the limitations "for longitudinally securing . . . terminal end-piece" and "for longitudinally clamping . . . terminal end-piece" are statements of intended use or function of the "arrangement." (*Id.* at 4-5). The Examiner determined that Christiansen's spring elements are capable of "laterally maintaining adjacent longitudinal ends of substantially all the fuel rods 12" and "longitudinally securing the adjacent longitudinal ends of the fuel rods

relative to the terminal end-piece." (*Id.* at 5). The Examiner determined that the inherent friction in the spring 55 and the configuration of the bore 54h provides the capability to longitudinally secure/clamp the adjacent ends of the fuel rods. (*Id.* at 6).

Appellants contend that Christiansen does not disclose "an arrangement for longitudinally securing," or "two components for longitudinally clamping," as recited in claim 16. (App. Br. 4). Appellants acknowledge that Christiansen's lower tie plate 54 and springs 55 laterally restrain the longitudinal ends of the fuel rods, but contend that the fuel rods can move longitudinally with respect to these elements. (*Id.*). Appellants contend that "Christiansen specifically states that the fuel rods are free to move longitudinally." (*Id.*) (citing Christiansen, col. 1, ll. 28-32). At col. 1, ll. 28-32, Christiansen describes:

> In order to accommodate the longitudinal (i.e. axial) expansion of the fuel rods during reactor operations, the restraining holes in the lower tie plate which receive the fuel rod end caps are sized so the fuel rod end caps when positioned in their corresponding restraining holes are free to move.

However, this passage in Christiansen pertains to prior art fuel assembly designs. (*See also* Christiansen, col. 1, ll. 12-27). Appellants have not established that this passage pertains to the structure shown in Figure 5 of Christiansen, much less that it constitutes evidence that the fuel rods are "free to move longitudinally" relative to the lower tie plate 54 and springs 55 in that structure. In addition, this passage describes longitudinal expansion that occurs during reactor operation. The Examiner correctly determined that the claims do not preclude providing "longitudinal securing" under any reactor status/condition. (Ans. 5, 8-9).

Appellants also contend that Christiansen's fuel rods are not "longitudinally secured" before the reactor is operated and coolant is flowed (App. Br. 4), and that the fuel rods shown in Figure 5 of Christiansen are not secured longitudinally and longitudinal movement of the fuel rods is likely to occur once vibrations occur (*Id.* at 5). In support of their contention that Christiansen's fuel rods are "free to move longitudinally," Appellants cite to column 4, lines 33-46, of Christiansen. (*Id.*). At column 4, lines 33-37, Christiansen describes (emphasis added):

> *[A]llowable movement* of the fuel rod relative to the tie plate *is controlled* by the length of engagement of the fuel rod in the hole and the diametrical clearance. Vibration induced wear is then prevented by the application of an internal spring that supplements the rigid lateral restraint.

However, this passage in Christiansen describes that "allowable movement" of the fuel rods relative to the tie plate is "controlled." An ordinary meaning of "controlled" is "restrained." *Merriam Webster's Collegiate Dictionary* 272 (11th ed. 2003). As such, we understand Christiansen to teach that the fuel rods are "longitudinally restrained" relative to the tie plate (in addition to being laterally restrained), not that the fuel rods are "free to move longitudinally." Moreover, the Examiner found that this allowable movement of the fuel rods occurs during reactor operation, and claim 16 does not require such condition. (Ans. 9).

Appellants also contend that "longitudinal securing" is not inherent with Christiansen's lateral restraint and "allowable movement." (App. Br. 5*; see also* Reply Br. 2). As Christiansen teaches that such allowable movement of the fuel rods relative to the tie plate is controlled (i.e., restrained), Appellants appear to argue that the term "longitudinally securing" should be construed to require that there *not* be *any* allowable movement of the adjacent longitudinal ends of the fuel

rods relative to the terminal end-piece. However, claim 16 does not recite any limitation that requires giving the term "longitudinally securing" a specific meaning that would distinguish it from "controlling" allowable movement of the fuel rods relative to the tie plate as taught by Christiansen.

The Patent Office gives claims their broadest reasonable interpretation consistent with the specification, reading the claim language as it would be interpreted by one of ordinary skill in the art. *See In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). Appellants do not contend that the Specification presents a specific definition of the term "longitudinally securing," or expressly disclaims a broad interpretation. *See In re Paulsen,* 30 F.3d 1475, 1480 (Fed. Cir. 1994) (An applicant is permitted to define specific terms used to describe the invention by setting forth a definition for terms with reasonable clarity, deliberateness and precision.); and *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004) ("Absent claim language carrying a narrow meaning, the PTO should only limit the claim based on the specification or prosecution history when those sources expressly disclaim the broader definition.") As such, Appellants have not presented any persuasive reasoning as to why the term "longitudinally securing" should be construed narrowly to distinguish it from "controlling" allowable movement of the fuel rods as taught by Christiansen.

Where the Patent Office has reason to believe that a claimed functional limitation is an inherent characteristic of the prior art, the burden shifts to Appellants to show that the prior art does not possess that characteristic. *See In re Best*, 562 F.2d 1252, 1254-55 (CCPA 1977) (quoting *In re Swinehart*, 439 F.2d 210, 212-13 (CCPA 1971)). Here, the Examiner articulated a reasonable basis as to why the functional limitation "longitudinally securing the adjacent longitudinal

ends of the fuel rods relative to the terminal end-piece" is an inherent characteristic of Christiansen's fuel assembly structure. The Examiner's finding shifted the burden to Appellants to demonstrate that Christiansen's structure is incapable of meeting this functional limitation. Appellants have not, however, presented any convincing argument or evidence to show that Christiansen's structure is incapable of performing the functional limitation.

As to the limitation "the end-piece comprises two components for longitudinally clamping the adjacent longitudinal ends of the fuel rods between the two components" recited in claim 16, Appellants merely contend that Christensen does not disclose "longitudinal clamping or securing" and rely on substantially the same arguments made with respect to "longitudinally securing." (Reply Br. 2). However, because Appellants' arguments with respect to "longitudinal securing" are not persuasive, and Appellants have not presented any persuasive argument as to why Christiansen's lower tie plate 54 and spring elements 55 are incapable of providing the claimed "longitudinal clamping," we sustain the rejection of claim 16.

Appellants do not separately argue any specific limitations recited in claims 17, 22, and 23, which depend from claim 16. Hence, we also sustain the rejection of claims 17, 22, and 23.

Claim 24 is directed to a fuel assembly for a nuclear reactor and depends from claim 16. The Examiner's findings for claim 24 are substantially similar to the Examiner's findings with respect to claim 16 discussed *supra*. (App. Br. 4-6). Appellants rely on substantially the same arguments made for claim 16 discussed *supra* (App. Br. 6), and additionally contend that "claim 24 specifically recites components that 'longitudinally clamp' which is clearly not an intended use, but

rather the *actual interrelation* of the components with the longitudinal ends" (Reply Br. 2). However, for similar reasons to those discussed *supra* with respect to claim 16, Appellants have not presented any persuasive argument as to why Christiansen's structure would not "longitudinally clamp" between lower tie plate 54 and spring elements 55 the adjacent ends of the fuel rods, as called for in claim 24. Hence, we also sustain the rejection of claim 24. Appellants do not separately argue any specific limitations recited in claims 25 and 28, which depend from claim 24. Hence, we also sustain the rejection of claims 25 and 28.

Rejection of claim 18 as unpatentable over Christiansen and Matzner

Claim 18 depends from claim 16. Regarding claim 18, the Examiner relied on Matzner for disclosure of anti-debris filters suitable for use in a fuel assembly. (Ans. 7). Appellants rely on substantially the same arguments made with respect to claim 16 discussed *supra,* and also contend that "there is no reason or motivation for one of ordinary skill in the art to modify Christiansen in view of Matzner." (App. Br. 6-7). Appellants do not, however, explain why the reasoning provided by the Examiner is unreasonable or not based on rational underpinnings. Hence, we sustain the obviousness rejection of claim 18.

CONCLUSION

The Examiner did not err in finding that Christiansen discloses "an arrangement for longitudinally securing the adjacent longitudinal ends of the fuel rods relative to the terminal end-piece, and wherein the end-piece comprises two components for longitudinally clamping the adjacent longitudinal ends of the fuel rods between the two components," as recited in claim 16.

DECISION

Each of the Examiner's rejections is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

JRG